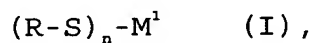


CLAIMS

1. A method for performing mass spectrometry of sulfur
5 atom-containing derivatives of an organic residue,
characterized in that the method comprises ionizing a
metal-organic residue complex into the derivatives, wherein
the complex has the organic residue bound through a sulfur
atom to the metal.

10

2. A method for performing mass spectrometry of a compound
or salt thereof, characterized in that the method comprises
ionizing a metal-organic residue complex into sulfur
atom-containing derivatives,
15 wherein the metal-organic residue complex is represented
by the general formula (I)



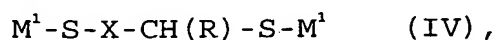
wherein R is an organic residue, S is a sulfur atom and
n indicates a stoichiometric ratio of (R-S) group with respect
20 to M^1 and is an integer equal to or greater than 1; and

wherein the compound is represented by the general
formulae (II) and/or (III):



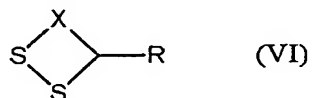
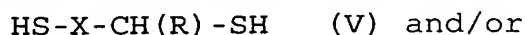
25 wherein R and S are the same as defined above.

3. A method for performing mass spectrometry of a compound
or salt thereof, characterized in that the method comprises
ionizing a metal-organic residue complex into sulfur
30 atom-containing derivatives,
wherein the metal-organic residue complex is represented
by the general formula (IV):



wherein R is an organic residue, S is a sulfur atom, M¹ at both ends are same metal entities, X is a lower alkylene or a lower alkenylene;

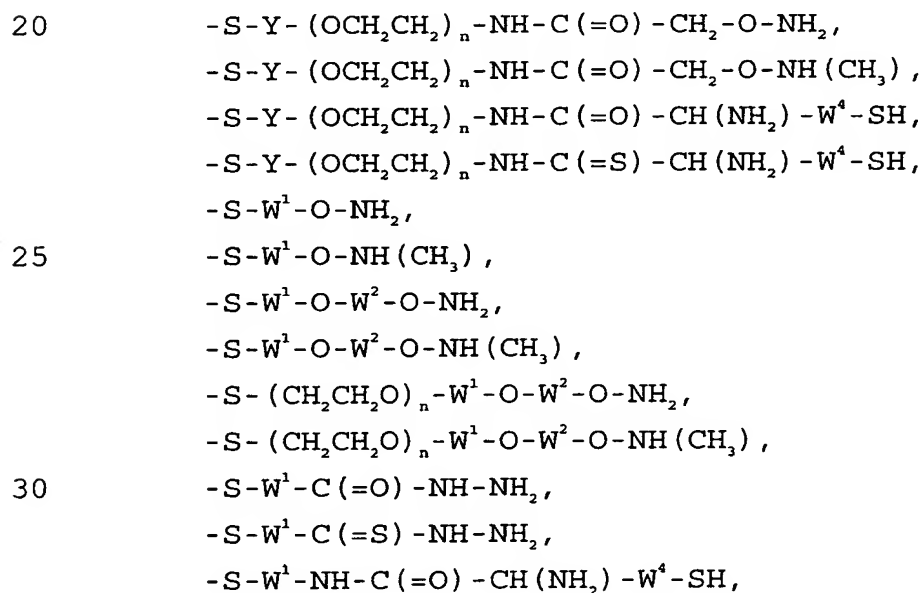
5 wherein the compound is represented by the general formulae (V) and/or (VI):



wherein R, S and X are the same as defined above.

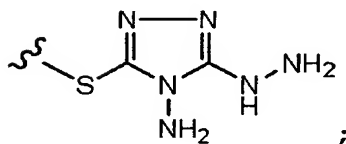
10 4. A method for performing mass spectrometry of a sugar chain or a sugar chain-containing substance, comprising the following steps of:

1) contacting a metal-organic residue complex with a sugar chain or a sugar chain-containing substance under the conditions where the metal-organic residue complex and the
15 sugar chain or sugar chain-containing substance may react with each other, wherein the metal-organic residue complex contains a metal bound to a group represented by the following formula:



- S-W¹-NH-C(=S)-CH(NH₂)-W⁴-SH
- S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH₂,
- S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH(CH₃),
- S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
- 5 -S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-Z⁶-SH,
- S-Z¹-O-Z³-CH(NH₂)-Z⁶-SH,
- S-Z¹-O-Z³-O-NH₂,
- S-Z¹-O-Z³-O-NH(CH₃),
- S-Z¹-O-Z³-Z⁴-Z⁵-O-NH₂,
- 10 -S-Z¹-O-Z³-Z⁴-Z⁵-O-NH(CH₃),
- S-Z¹-O-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH
- S-Z¹-O-Z³-Z⁴-CH(NH₂)-Z⁶-SH
- S-Z¹-Z³-Z⁴-Z⁵-O-NH₂,
- S-Z¹-Z³-Z⁴-Z⁵-O-NH(CH₃),
- 15 -S-Z¹-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
- S-Z¹-Z³-Z⁴-CH(NH₂)-Z⁶-SH,

or

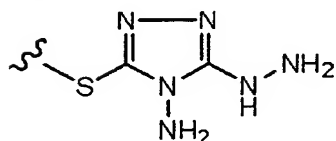


- 2) obtaining the metal-organic residue complex bound to the
- 20 sugar chain or the sugar chain-containing substance; and
- 3) ionizing the metal-organic residue complex bound to the
- sugar chain or the sugar chain-containing substance into
- sulfur atom-containing derivatives of the organic residue.
- 25 5. A method according to any one of claims 1 to 4, wherein
- the metal has a surface enough to cause a diffuse reflection
- of a laser beam.
- 6. A method according to claim 5, wherein the metal is a
- 30 fine metal particle.

7. A method according to any one of claims 1 to 6, wherein the metal is gold, silver, cadmium or selenium.
- 5 8. A method according to any one of claims 1 to 6, wherein the mass spectrometry is carried out by MALDI-TOF MS method.
9. A method according to any one of claims 1 to 3, wherein the organic residue is a group comprising a sugar chain or
10 a sugar chain-containing substance.
10. A method for performing mass spectrometry of a sulfur atom-containing analyte comprising the steps of:
- 15 1) reacting tetrachloroauric acid with a sulfur atom-containing analyte in the presence of a reducing agent;
- 2) obtaining a gold-analyte complex particle which has the analyte bound through the sulfur atom to the gold; and
- 3) ionizing the obtained gold-analyte complex particles into a sulfur atom-containing analyte derivative.
- 20 11. A metal-organic residue complex containing a metal bound to a group represented by the following formula:
- S-Y-(OCH₂CH₂)_n-NH-C(=O)-CH₂-O-NH₂,
- S-Y-(OCH₂CH₂)_n-NH-C(=O)-CH₂-O-NH(CH₃),
- 25 -S-Y-(OCH₂CH₂)_n-NH-C(=O)-CH(NH₂)-W¹-SH,
- S-Y-(OCH₂CH₂)_n-NH-C(=S)-CH(NH₂)-W¹-SH,
- S-W¹-O-NH₂,
- S-W¹-O-NH(CH₃),
- S-W¹-O-W²-O-NH₂,
- 30 -S-W¹-O-W²-O-NH(CH₃),
- S-(CH₂CH₂O)_n-W¹-O-W²-O-NH₂,
- S-(CH₂CH₂O)_n-W¹-O-W²-O-NH(CH₃),
- S-W¹-C(=O)-NH-NH₂,

- S-W¹-C(=S)-NH-NH₂,
 -S-W¹-NH-C(=O)-CH(NH₂)-W⁴-SH,
 -S-W¹-NH-C(=S)-CH(NH₂)-W⁴-SH,
 -S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH₂,
 5 -S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH(CH₃),
 -S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
 -S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-Z⁶-SH,
 -S-Z¹-O-Z³-CH(NH₂)-Z⁶-SH,
 -S-Z¹-O-Z³-O-NH₂,
 10 -S-Z¹-O-Z³-O-NH(CH₃),
 -S-Z¹-O-Z³-Z⁴-Z⁵-O-NH₂,
 -S-Z¹-O-Z³-Z⁴-Z⁵-O-NH(CH₃),
 -S-Z¹-O-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH
 -S-Z¹-O-Z³-Z⁴-CH(NH₂)-Z⁶-SH
 15 -S-Z¹-Z³-Z⁴-Z⁵-O-NH₂,
 -S-Z¹-Z³-Z⁴-Z⁵-O-NH(CH₃),
 -S-Z¹-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
 -S-Z¹-Z³-Z⁴-CH(NH₂)-Z⁶-SH,

or



20 wherein, Y, W¹ and W² are independently C1-C12 alkylene, C2-C12
 alkenylene or C2-C12 alkynylene;

W⁴ is C1-C2 alkylene;

Z¹ is substituted or unsubstituted arylen or heteroarylen;

25 Z² is a nitrogen-containing heterocycle;

Z³ and Z⁵ are independently C1-C12 alkylene;

Z⁴ is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

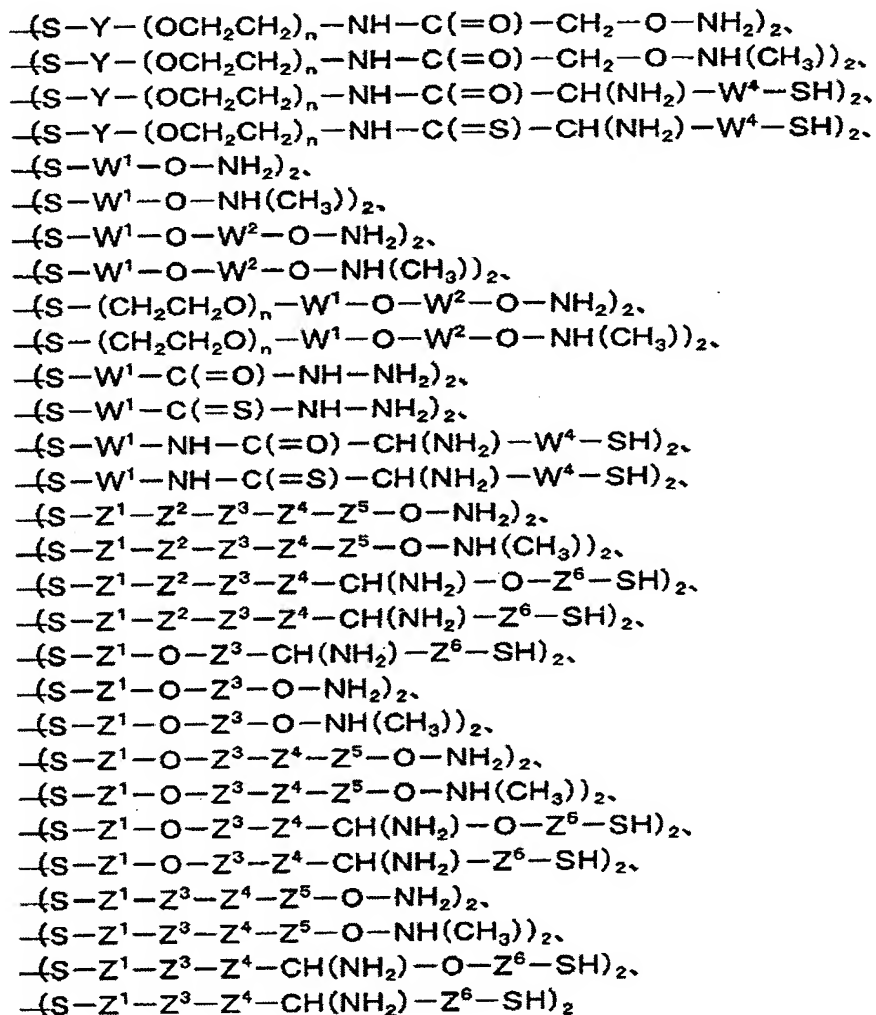
Z⁶ is C1-C2 alkylene; and

n is an integer between 1 and 10, inclusive.

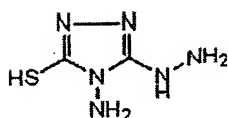
30

12. A method for producing metal-organic residue complex

particles, wherein the method comprises reacting tetra-chloroauric acid with a compound represented by the following formula:



5 or



, or a salt thereof, in the presence of a reducing agent, wherein, Y, W¹ and W² are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

W^4 is C1-C2 alkylene;

Z^1 is substituted or unsubstituted arylene or heteroarylen;

Z^2 is a nitrogen-containing heterocycle;

Z^3 and Z^5 are independently C1-C12 alkylene;

5 Z^4 is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

Z^6 is C1-C2 alkylene; and

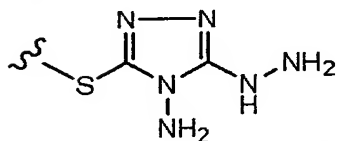
n is an integer between 1 and 10, inclusive.

13. A method for trapping a sugar chain or a sugar
10 chain-containing substance, characterized in that the method
comprises contacting a metal-organic residue complex with
a sugar chain or a sugar chain-containing substance, under
conditions where the metal-organic residue complex and the
sugar chain or the sugar chain-containing substance may react
15 with each other,
the metal-organic residue complex has a metal bound to a
group represented by the following formula:

20 -S-Y-(OCH₂CH₂)_n-NH-C(=O)-CH₂-O-NH₂,
-S-Y-(OCH₂CH₂)_n-NH-C(=O)-CH₂-O-NH(CH₃),
-S-Y-(OCH₂CH₂)_n-NH-C(=O)-CH(NH₂)-W⁴-SH,
-S-Y-(OCH₂CH₂)_n-NH-C(=S)-CH(NH₂)-W⁴-SH,
-S-W¹-O-NH₂,
-S-W¹-O-NH(CH₃),
-S-W¹-O-W²-O-NH₂,
25 -S-W¹-O-W²-O-NH(CH₃),
-S-(CH₂CH₂O)_n-W¹-O-W²-O-NH₂,
-S-(CH₂CH₂O)_n-W¹-O-W²-O-NH(CH₃),
-S-W¹-C(=O)-NH-NH₂,
-S-W¹-C(=S)-NH-NH₂,
30 -S-W¹-NH-C(=O)-CH(NH₂)-W⁴-SH,
-S-W¹-NH-C(=S)-CH(NH₂)-W⁴-SH,
-S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH₂,
-S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH(CH₃),

- 5
10
15
- S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
 - S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-Z⁶-SH,
 - S-Z¹-O-Z³-CH(NH₂)-Z⁶-SH,
 - S-Z¹-O-Z³-O-NH₂,
 - S-Z¹-O-Z³-O-NH(CH₃),
 - S-Z¹-O-Z³-Z⁴-Z⁵-O-NH₂,
 - S-Z¹-O-Z³-Z⁴-Z⁵-O-NH(CH₃),
 - S-Z¹-O-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH
 - S-Z¹-O-Z³-Z⁴-CH(NH₂)-Z⁶-SH
 - S-Z¹-Z³-Z⁴-Z⁵-O-NH₂,
 - S-Z¹-Z³-Z⁴-Z⁵-O-NH(CH₃),
 - S-Z¹-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
 - S-Z¹-Z³-Z⁴-CH(NH₂)-Z⁶-SH,

or



- 15
- wherein, Y, W¹ and W² are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

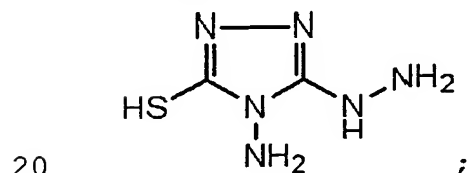
- W⁴ is C1-C2 alkylene;
- Z¹ is substituted or unsubstituted arylene or heteroarylene;
- 20 Z² is a nitrogen-containing heterocycle;
- Z³ and Z⁵ are independently C1-C12 alkylene;
- Z⁴ is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;
- Z⁶ is C1-C2 alkylene; and
- n is an integer between 1 and 10, inclusive.

14. A method for measuring the molecular weight of a substance which may interact with an organic residue of a metal-organic residue complex, comprising the steps of:

- 5 1) contacting the metal-organic residue complex with a substance which may interact with the organic residue, wherein the metal is bound through a sulfur atom to organic residue;
- 10 2) obtaining the metal-organic residue complex bound to the substance which may interact; and
- 3) ionizing the obtained metal-organic residue complex into derivatives of the organic residue, wherein the organic residue contains a sulfur atom.

15 15. A method for performing mass spectrometry of a sugar chain or a sugar chain-containing substance, comprising the steps of:

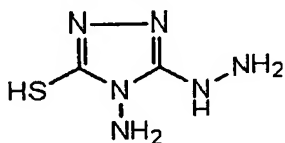
- 1) contacting a compound with a metal, wherein the compound is represented by the following formula:



- 2) contacting the metal-organic residue complex obtained in 1) with a sugar chain or a sugar chain-containing substance under conditions where the metal-organic residue complex and the sugar chain or the sugar chain-containing substance may react with each other; and
- 25 3) ionizing the metal-organic residue complex obtained in 2) into derivatives of the organic residue, wherein the organic residue contains a sulfur atom.

16. A method for performing mass spectrometry of a sugar chain or a sugar chain-containing substance, comprising the steps of:

- 1) contacting a compound represented by the following
5 formula:



with a sugar chain or a sugar chain-containing substance under conditions where the compound and the sugar chain or the sugar chain-containing substance may react with each
10 other;

- 2) contacting the compound obtained in 1) with a metal;
and

3) ionizing the metal-organic residue complex obtained in 2) into derivatives of the organic residue, wherein the
15 organic residue contains a sulfur atom.

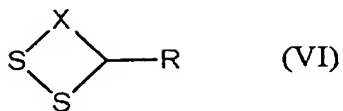
17. A composition for trapping a sugar chain, comprising
:

a compound represented by the general formula (II):
20 R-SH (II) or a salt thereof, wherein R is an organic residue; and S is a sulfur atom;

a compound represented by the general formula (III):
R-S-S-R (III) or a salt thereof, wherein, R and S are
the same as defined above;

25 a compound represented by the general formula (V):
HS-X-CH(R)-SH (V) or a salt thereof, wherein R and S are the same as defined above; and X is lower alkylene or lower alkenylene; or

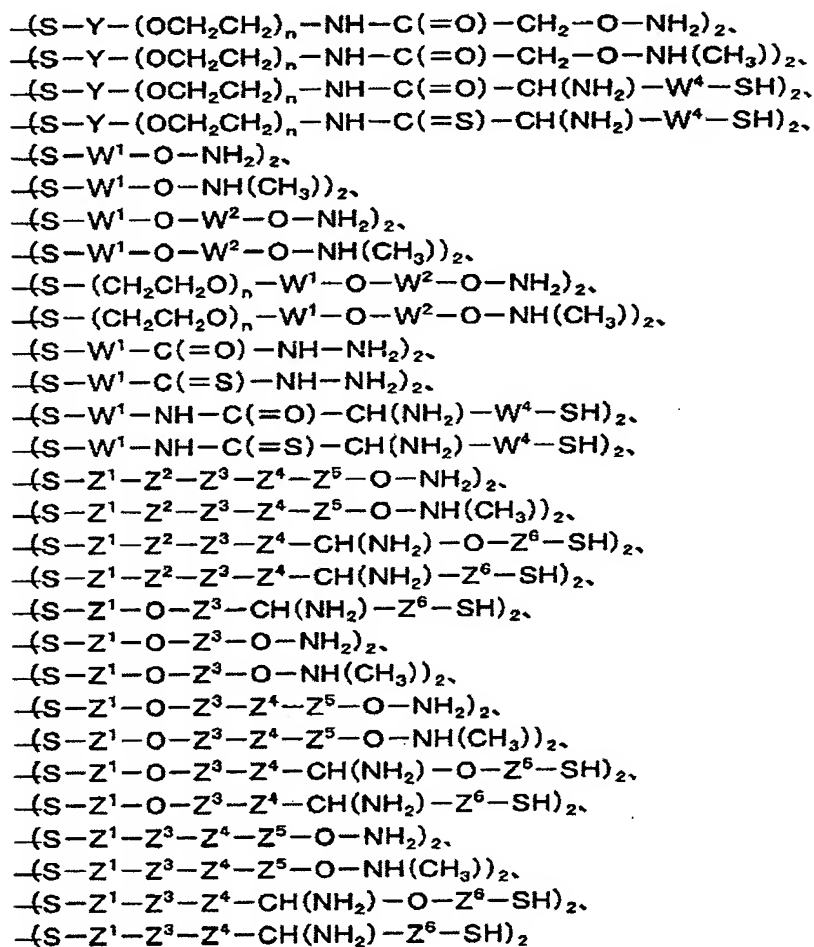
a compound represented by the general formula (VI):



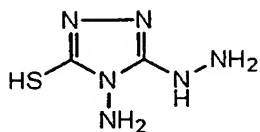
or a salt thereof, wherein, R, S and X are the same as defined above; or a mixture thereof.

5

18. A composition for trapping a sugar chain, comprising a compound represented by the following formula:



or



wherein Y, W¹ and W² are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

W⁴ is C1-C2 alkylene;

5 Z¹ is substituted or unsubstituted arylen or heteroarylen;

Z² is a nitrogen-containing heterocycle;

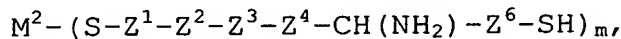
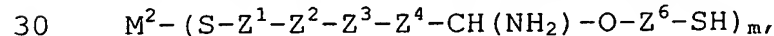
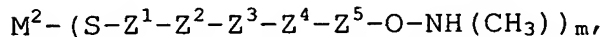
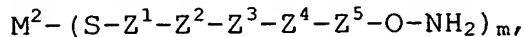
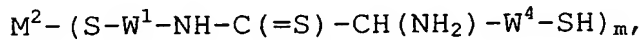
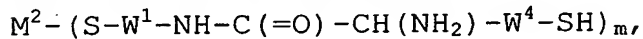
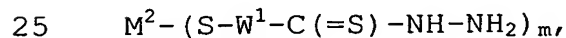
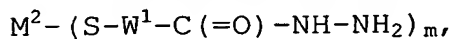
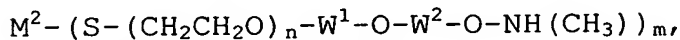
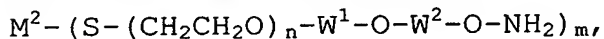
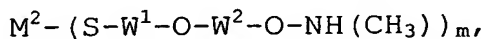
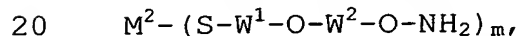
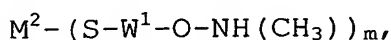
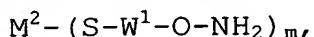
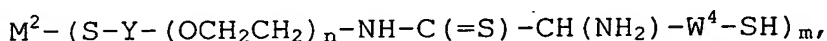
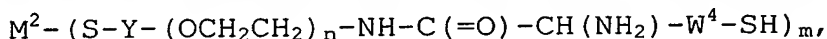
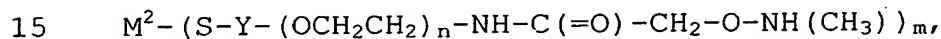
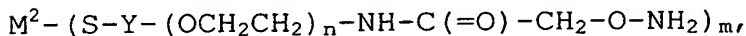
Z³ and Z⁵ are independently C1-C12 alkylene;

Z⁴ is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

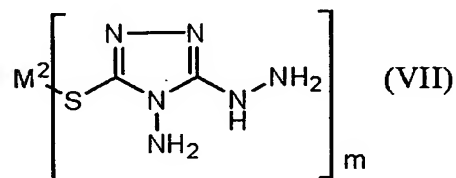
Z⁶ is C1-C2 alkylene; and

10 n is an integer between 1 and 10, inclusive.

19. A metal-organic residue complex represented by the following formula:

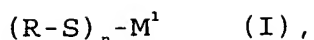


- $M^2-(S-Z^1-O-Z^3-CH(NH_2)-Z^6-SH)_m,$
 $M^2-(S-Z^1-O-Z^3-O-NH_2)_m,$
 $M^2-(S-Z^1-O-Z^3-O-NH(CH_3))_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH_2)_m,$
5 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH(CH_3))_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m,$
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH_2)_m,$
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH(CH_3))_m,$
10 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m,$
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m,$
or the general formula (VII):



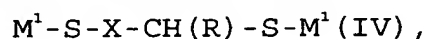
- wherein, M^2 is a metal;
 15 m indicates a stoichiometric ratio of an organic residue with respect to M^2 and is an integer equal to or greater than 1, wherein the organic residue contains a sulfur atom;
 Y , W^1 and W^2 are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;
 20 W^4 is C1-C2 alkylene;
 Z^1 is substituted or unsubstituted arylene or heteroarylen;
 Z^2 is a nitrogen-containing heterocycle;
 Z^3 and Z^5 are independently C1-C12 alkylene;
 Z^4 is $-O-C(=O)$, $-O-C(=S)$, $-NH-C(=O)$, $-NH-C(=S)$, $-O-$ or $-S-$;
 25 Z^6 is C1-C2 alkylene; and
 n is an integer between 1 and 10, inclusive.

20. A composition for trapping a sugar chain, comprising:
 a metal-organic residue complex represented by the
 30 general formula (I):



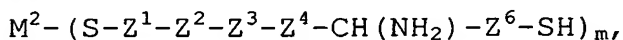
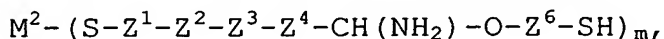
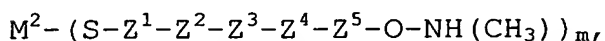
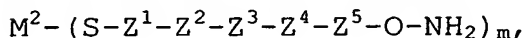
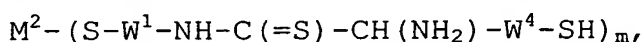
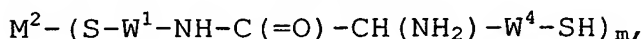
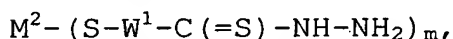
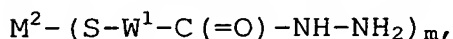
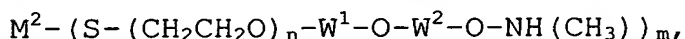
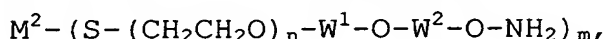
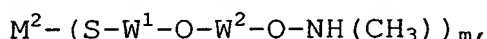
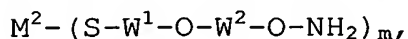
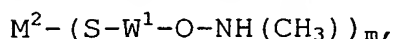
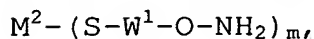
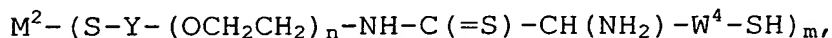
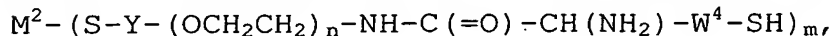
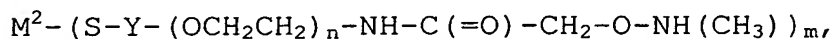
wherein R is an organic residue; S is a sulfur atom; M^1 is a metal; and n indicates a stoichiometric ratio of (R-S) group with respect to M^1 and is an integer equal to or greater than 1; or

a metal-organic residue complex represented by the general formula (IV):

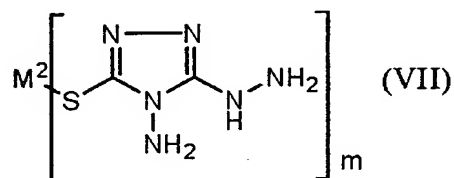


wherein R and S are the same as defined above, M^1 at both ends are a metal of the same substance and X is lower alkylene or lower alkenylene.

21. A composition for trapping a sugar chain, comprising a metal-organic residue complex, represented by the following formula:



- $M^2-(S-Z^1-O-Z^3-CH(NH_2)-Z^6-SH)_m,$
 $M^2-(S-Z^1-O-Z^3-O-NH_2)_m,$
 $M^2-(S-Z^1-O-Z^3-O-NH(CH_3))_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH_2)_m,$
5 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH(CH_3))_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m,$
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH_2)_m,$
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH(CH_3))_m,$
10 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m,$
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m,$
or the general formula (VII):



- wherein,
 15 M^2 is a metal;
 m indicates a stoichiometric ratio of an organic residue with respect to M^2 and is an integer equal to or greater than 1, wherein the organic residue comprises a sulfur atom;
 Y, W^1 and W^2 are independently C1-C12 alkylene, C2-C12
 20 alkenylene or C2-C12 alkynylene;
 W^4 is C1-C2 alkylene;
 Z^1 is substituted or unsubstituted arylene or heteroarylene;
 Z^2 is a nitrogen-containing heterocycle;
 Z^3 and Z^5 are independently C1-C12 alkylene;
 25 Z^4 is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;
 Z^6 is C1-C2 alkylene and
 n is an integer between 1 and 10, inclusive.

22. A kit for mass spectrometry of a sugar chain or a sugar
 30 chain-containing substance, comprising:

A) a compound represented by the general formula (II):



or a salt thereof, wherein R is an organic residue; and S is a sulfur atom;

5 a compound represented by the general formula (III)



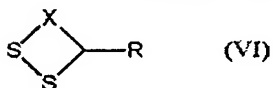
or a salt thereof, wherein R and S are the same as defined above;

a compound represented by the general formula (V):



or a salt thereof, wherein R and S are the same as defined above; and X is lower alkylene or lower alkenylene; or

a compound represented by the general formula (VI):

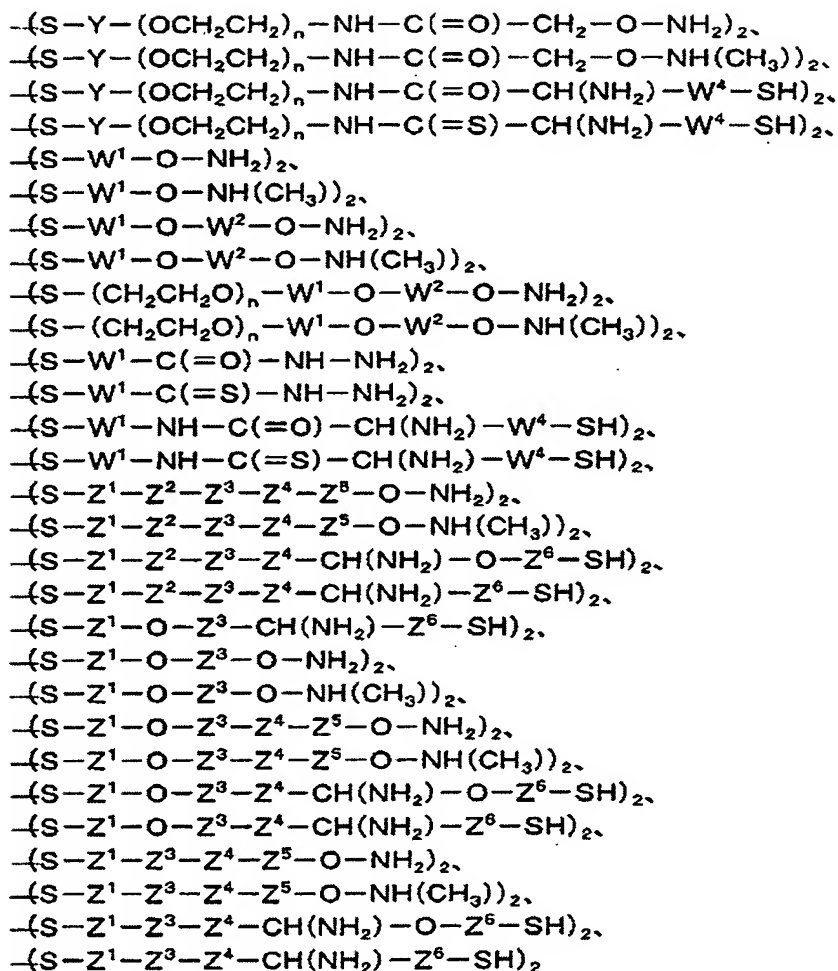


15 or a salt thereof, wherein R, S and X are the same as defined above; or a mixture thereof; and

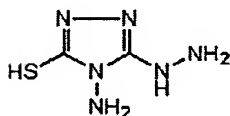
B) a metal.

23. A kit for mass spectrometry of a sugar chain or a sugar
20 chain-containing substance, comprising:

A) a sulfur atom containing derivatives of an organic residue, represented by the following formula:



or



wherein Y, W¹ and W² are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

5

W⁴ is C1-C2 alkylene;

Z¹ is substituted or unsubstituted arylen or heteroarylen;

Z² is a nitrogen-containing heterocycle;

Z³ and Z⁵ are independently C1-C12 alkylene;

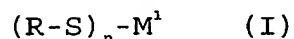
10

Z⁴ is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

Z^6 is C1-C2 alkylene; and
 n is an integer between 1 and 10, inclusive; and
 B) a metal.

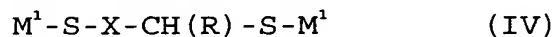
5 24. A kit for mass spectrometry of a sugar chain or a sugar chain-containing substance, comprising:

a metal-organic residue complex represented by the general formula (I):



10 wherein, R is an organic residue, S is a sulfur atom, M^1 is a metal and n indicates a stoichiometric ratio of (R-S) group with respect to M^1 and is an integer equal to or greater than 1; or

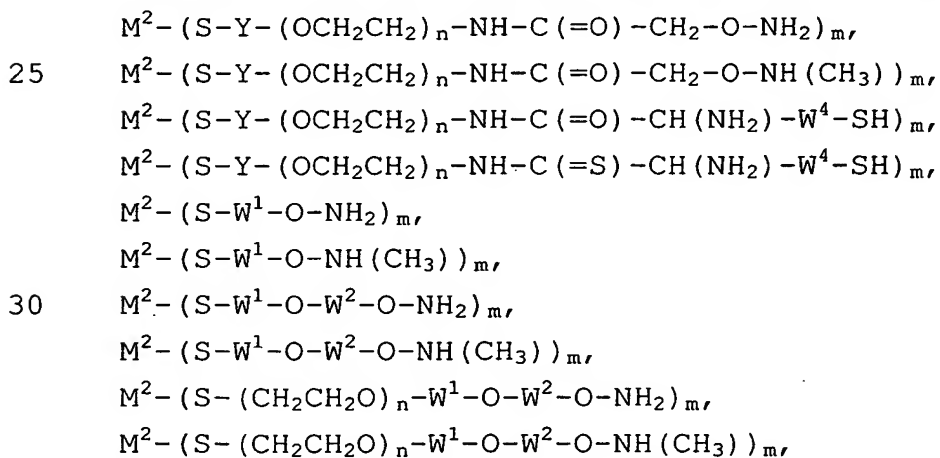
15 a metal-organic residue complex represented by the general formula (IV):



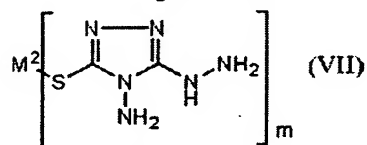
wherein R and S are the same as defined above, M^1 at both ends are same metal entities and X is lower alkylene or lower alkenylene.

20

25. A kit for mass spectrometry of a sugar chain or a sugar chain-containing substance, comprising a metal-organic residue complex, represented by the following formula:



- $M^2-(S-W^1-C(=O)-NH-NH_2)_m$,
 $M^2-(S-W^1-C(=S)-NH-NH_2)_m$,
 $M^2-(S-W^1-NH-C(=O)-CH(NH_2)-W^4-SH)_m$,
 $M^2-(S-W^1-NH-C(=S)-CH(NH_2)-W^4-SH)_m$,
5 $M^2-(S-Z^1-Z^2-Z^3-Z^4-Z^5-O-NH_2)_m$,
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-Z^5-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m$,
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m$,
 $M^2-(S-Z^1-O-Z^3-CH(NH_2)-Z^6-SH)_m$,
10 $M^2-(S-Z^1-O-Z^3-O-NH_2)_m$,
 $M^2-(S-Z^1-O-Z^3-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH_2)_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m$,
15 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m$,
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH_2)_m$,
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m$,
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m$,
20 or the general formula (VII):



- wherein, M^2 is a metal, m indicates a stoichiometric ratio
 of an organic residue with respect to M^2 and is an integer
 equal to or greater than one, the organic residue comprises
 25 a sulfur atom, Y , W^1 and W^2 are independently C1-C12 alkylene,
 C2-C12 alkenylene or C2-C12 alkynylene, W^4 is C1-C2 alkylene;
 Z^1 is substituted or unsubstituted arylene or heteroarylene;
 Z^2 is a nitrogen-containing heterocycle, Z^3 and Z^5 are
 independently C1-C12 alkylene, Z^4 is $-O-C(=O)$, $-O-C(=S)$,
 30 $-NH-C(=O)$, $-NH-C(=S)$, $-O-$ or $-S-$, Z^6 is C1-C2 alkylene; and
 n is an integer between 1 and 10, inclusive.

26. A method according to any one of claims 1 to 6, wherein the mass spectrometry is carried out by LDI-TOF MS method.
- 5 27. A method according to claim 10, wherein the mass spectrometry is carried out by LDI-TOF MS method.